FOREIGN ANIMAL
DISEASES REPORT

JULY-AUGUST 1974

CALIFORNIA NEWCASTLE DISEASE ERADICATION SUCCESSFUL

The exotic Newcastle disease eradication task force operation in Riverside, California, was closed July 3, 1974, and Secretary of Agriculture Earl L. Butz announced the end of the extraordinary emergency after extensive surveillance proved the disease no longer exists in southern California poultry flocks.

Viscerotropic Velogenic Newcastle Disease (VVND) was first detected in Fontana, California, on November 26, 1971. The disease rapidly spread to six counties, three of which are the leading egg producers in the United States. Counties involved were: Riverside, San Bernardino, Los Angeles, Orange, Ventura, and San Diego. These counties, along with Santa Barbara and Imperial Counties, were included in a quarantine area of 46,000 square miles. Standard disease eradication measures were used including quarantines, disease detection, depopulation of infected and exposed flocks, and cleaning and disinfection (C&D) of premises. New eradication measures adopted were: the sentinel bird program which involved placing unvaccinated chickens to detect infection in heavily vaccinated flocks and the Epidemiological Necropsy Surveillance Program (ENSP) which involved the collection of dead birds from commercial ranches on a weekly basis and subjecting them to laboratory procedures. A vaccination program was utilized in the belief it would slow down spread of the virus. The vaccines masked infected flocks making diagnosis extremely difficult. Almost 1 million backyard chickens were vaccinated twice. In some areas, the cost to vaccinate one backyard chicken was $3.96 per chicken. The backyard vaccination program required 700 personnel and 400 vehicles. Commercial flocks were less expensive to vaccinate, ranging from .1 cent per bird for mass vaccination to 1 cent per bird for individual vaccination. A total of 23,859 sentinel birds were placed on 458 commercial ranches and 13,281 were placed in 2,594 backyard flocks. Cost of placement, maintenance and testing of sentinels was $29 for each bird. The sentinel birds detected infection in 26 commercial and three backyard flocks. In addition, this procedure proved large areas disease free with consequent reduction in program cost.

The ENSP operated from September 1972, to June 1974. Over 22,000 ranch visits were made and 115,000 dead birds collected. Collection of dead birds for 1 month and laboratory tests cost $142 per ranch as compared to a minimum of $900 to maintain sentinel birds on a commercial ranch for 1 month.

The most satisfactory means to depopulate large flocks was by use of a leak-proof rendering truck covered with a tarp and modified with a continuous flow of carbon monoxide from a gasoline combustion engine.

The need for detailed C&D was demonstrated by isolation of VVND virus from surface water 17 days after all birds had been removed. The VVND virus was recovered from the lesser house fly, F. canicularis (L) collected on infected premises necessitating initiation of a fly control program. Nine thousand four hundred and forty-six (9,446) specimens were collected from 71 species of true wild birds. VVND virus was isolated from 3 of 1,817 house sparrows and 1 of 472 crows collected. Free flying wild birds did not play a role in the VVND epizootic in California. Limited epidemiological studies indicated that winds up to 90 miles per hour had little, if any, influence on spread of VVND in California.

The most likely source of introduction of VVND virus causing this epizootic was exotic birds imported from foreign countries. The virus was rapidly disseminated in an ideal environment of over 39 million commercial and 1 million backyard chickens with excellent weather conditions most of the year. The epizootic was brought under control in January 1973, and the last infection was a turkey flock on June 28, 1973. At the peak of the program, 1,300 personnel were engaged in the fight. Total personnel utilized was 3,292. Laboratory support was a major operation with 48,366 accessions, 217,631 specimens, 228,507 HI tests, 265,961 HA tests, and 435,386 embryo inoculations.

Program cost was $56 million of which 28 million was for indemnification. Nearly 12 million birds were depopulated involving 1,340 flocks of which 400 were determined to be infected. The largest flock depopulated contained 3,422,356 chickens.

Eradication was proven by a 12-month ENSP following the last positive flock and investigation of all reported sickness.

USDA SURVEYS POULTRY INDUSTRY FOR EXOTIC NEWCASTLE DISEASE

Exotic Newcastle disease has appeared in the United States several times since it was first detected in 1970. Each time, by hard work, it was stamped out; but the danger from this poultry disease to U.S. poultry is great.

The virulent exotic Newcastle virus causes losses even in flocks vaccinated for the milder strains common in this country since the 1940's. In unvaccinated poultry, the death rate approaches 100 percent.

The U.S. Department of Agriculture (USDA) allows the importation of birds, poultry and poultry products under specific health requirements. USDA's Animal and Plant Health Inspection Service (APHIS) works closely with other Federal agencies to prevent the entry of smuggled birds.

In spite of these regulations, pet birds--especially members of the parrot family--continue to be found to be infected when presented for entry or in

quarantine prior to release into the United States. Therefore, APHIS set up a cooperative surveillance program to quickly find exotic Newcastle disease infected birds and poultry and stamp out infections before they can spread.

This national surveillance program was authorized on October 1, 1973. Directed by Veterinary Services (VS) area Veterinarians in Charge (VIC's) and coordinated at the national level by the VS Poultry Diseases Staff, the program utilizes the expertise of poultry specialists in every APHIS region plus specially trained diagnosticians and epidemiologists to investigate suspicious cases. Cooperation of the commercial poultry and pet bird industries are important segments of the program.

During the first 9 months of the program, surveillance VS personnel and cooperating state veterinarians visited 122 premises of primary poultry breeders to evaluate security programs aimed at preventing introduction of exotic Newcastle disease or any other foreign poultry disease.

During Fiscal Year (FY) 1974, the surveillance teams made almost 5,500 contacts with poultry industry leaders, diagnostic laboratories, extension specialists and poultry scientists--people in a position first to hear about any unusual outbreak of poultry disease. These contacts are used as an early-warning system for unusual poultry disease outbreaks.

In this period, APHIS personnel were informed about 538 poultry disease outbreaks through the system that called for a field investigation. When necessary, suspects were sampled for laboratory testing.

Although most field investigations proved that exotic Newcastle disease was not causing the problem, the exotic form of the disease was found. It struck El Paso, Texas, in February 1974, and spread through backyard flocks and one large commercial egg ranch before being brought under control. It was detected again in Hidalgo County, Texas, but was confined to one backyard flock of mixed poultry.

An outbreak was detected in Comal County, Texas, early in June, but again was limited to one flock of mixed poultry. In each of these instances the disease was stamped out. All areas of the United States are now free of exotic Newcastle disease except the Commonwealth of Puerto Rico which remains under quarantine. USDA inspectors are maintained in Puerto Rico to examine baggage and handbags of travelers to the U.S., for live poultry, poultry products, and birds to preclude movement of the infection to the mainland.

The USDA allows birds to be imported from foreign countries only after a 30-day quarantine in an APHIS supervised quarantine station. During the past year, 14 stations have been approved. Approximately 30 lots of birds--mostly cage birds--have been offered for entry. In 11 situations, exotic Newcastle disease was diagnosed in shipments of birds and they were destroyed.

EXOTIC (VVND) NEWCASTLE DISEASE SYMPOSIUM

A World Symposium on Exotic (VVND) Newcastle Disease was held in conjunction with the XV World Poultry Congress on August 15, 1974, in New Orleans, Louisiana.

Listed below are the speakers and the title of their papers. (Highlights of these papers will be reviewed in a later issue of this publication).

Chairman
Dr. John W. Walker 9:00 a.m.

Speaker	Title
Dr. A. El-Zein Director, Regional Poultry Laboratory Research Institute of Agriculture Fanar, Lebanon	Newcastle Disease Control in Lebanon
Dr. W. Janssen Institute of Poultry Diseases School of Veterinary Medicine Hannover, Federal Republic of Germany	Situation of Newcastle Disease in the Federal Republic of Germany
Dr. May G. B. Lim (Mrs. May Chew) Officer in Charge Veterinary Diagnostic Laboratory Singapore, Republic of Singapore	Newcastle Disease in Singapore 1969-1973
Dr. Benjamin Lucio Head, Department of Avian Diseases Veterinary College University of Mexico, Mexico D.F.	Newcastle Disease in Mexico

Chairman
Dr. Charles W. Beard 10:40 a.m.

Dr. E. C. Sharman Chief, Technical Support Emergency Programs Veterinary Services, APHIS, USDA	The VVND Eradication Program in Southern California
J. C. Stuart, Esq., M.R.C.V.S. Head, Diagnostic Laboratory McLintock & Partners Veterinary Surgeons Norwich, England	The Control of Newcastle Disease in Britain and Scandinavia
Dr. J. E. Lancaster Chief, Poultry Diseases Health of Animals Branch Canada Department of Agriculture Ottawa, Ontario, Canada	Viscerotropic Velogenic Newcastle Disease in Canada Summary of VVND Worldwide

NEWCASTLE VACCINATION FOR INDIVIDUAL FLOCKS

The "how, when and with what" question of vaccination for Newcastle disease has been asked around the globe. The frequency with which it is asked has increased considerably within the past 3 years due to the widespread occurrence of velogenic viscerotropic Newcastle disease (VVND). Questions have varied to suit the particular situation only to be matched by answers that have varied to even greater extents.

This entire discussion on vaccination should not be interpreted to mean that vaccination is a proper substitute for eradicating VVND. Eradication is certainly the most desirable course to follow. However, this discussion is directed toward developing some "insurance by vaccination," for the time may come when the U.S. suffers VVND on such a scale that the poultry industry will decide to live with the disease rather than eradicate it. If the decision is ever made not to eradicate but to vaccinate, the information presented here should help flock owners understand some of the complexities of Newcastle vaccination.

Providing complete immunity against viruses that infect the cells lining the respiratory tract is difficult. This is true of influenza in man as well as Newcastle disease in chickens. The cells of the respiratory tract can be infected even if chickens have antibodies against the virus in their blood.

Virus may replicate and shed to other birds: An infection in a bird with moderate levels of circulating antibodies may produce no symptoms or signs of disease. The virus replicates in the cells and is shed to infect other chickens while the antibodies that are present in the host bird prevent the infection from progressing to the point of killing that host.

The infection may produce some signs of disease and even death in chickens with low levels of antibodies, depending upon the virulence of the virus (VVND is usually highly virulent). Chickens with high levels of antibodies will have less adverse responses to the infection than chickens with low levels of antibodies, and may resist infection entirely if the antibody levels are high enough. This is the reason for using vaccination programs that maintain high levels of circulating antibodies in areas of great risk to VVND.

There is some evidence to support the rapid development of some degree of local immunity of the respiratory routes. These routes include intra-nasal, intra-ocular, drinking water, debeaking injection and spray, the last being the most effective if properly performed.

Fit program to situation: A basic problem concerns the need for information on vaccination programs that are not only specifically designed to individual flock situations (age, mycoplasma status, etc.) but also tailored to meet the level of threat of VVND that exists in that particular area. For example, in areas where VVND is prevalent, less consideration would be given to the possible damage a vaccination procedure might do to that flock. The primary goal in such an area would be to provide maximum protection for the flock against the ravages of a VVND outbreak.

In areas where there is no active VVND, a poultryman may wish to achieve a moderate level of immunity so that a booster may be administered should VVND occur nearby. If VVND happened to initially occur in his flock with no prior warning from nearby outbreaks, his losses could be somewhat reduced by the vaccination.

What broiler growers must consider: There are so many considerations that influence the selection of a vaccine strain that generalizations on the subject are of limited value. The most important factor a broiler grower would use in selecting a program may be the risk of possible exposure to VVND. If broilers become exposed in a large house with no history of vaccination, the mortality would be disastrous.

Certain producers may choose to take the chance, considering their location and the level of security and sanitation that they practice. They may make this decision only because of the lack of VVND in their part of the country.

In situations where VVND is rampant, a broiler grower may decide to administer Newcastle vaccine to the chicks before they leave the hatchery. He then follows this day-old vaccination with weekly or biweekly spray vaccinations. This program is presently being followed in some countries where the disease persists. Such a program may result in decreased feed conversion ratios or increased air-sacculitis, especially in flocks that are infected with mycoplasma. These disadvantages are of reduced significance where mortality rates due to VVND are quite high in flocks that are not on such an intense vaccination program.

Priming for booster vaccinations: Some broiler growers have chosen to use either B-1 or LaSota vaccine administered in the drinking water when the chicks are 2 weeks of age. This procedure results in positive HI titers (1:10 or greater) in 45 - 90 percent of the broilers, depending on the strain used. Although this level of HI titer response could still allow for considerable illness and mortality in exposed birds, it does "prime" the birds for later booster vaccinations should they be needed.

If VVND occurred nearby or increased protection was desired for any reason, the flocks could be spray-vaccinated with B-1 or LaSota vaccine. The earlier experience with the drinking water vaccine would likely reduce the reaction to the spray and result in very early antibody rises and rapid protection.

Protecting layers: With layers, the problem is different. Due to the fear of VVND, some egg producers have sprayed laying flocks with LaSota. In some instances, the immune status of the birds was not determined by HI test before the vaccine spray. The producers just assumed that the chickens had adequate immunity to prevent severe reaction from the spray-booster because of previous water vaccinations.

The use of LaSota as a spray on layers may have resulted from the recent publicity that the procedure has received. In the event VVND sweeps uncontrolled across the country, LaSota-spray may be most likely defense against severe poultry losses, but I do seriously question the way that some have used it in VVND-free areas up to now.

I believe that the major emphasis on Newcastle vaccination in layers should be before they reach the laying house. One procedure could include progression through a drinking water program to LaSota spray, followed by adequate HI testing to prove that the vaccination procedure was properly performed and that the birds have developed antibodies against the Newcastle virus. This would result in layers that have a good vaccination history and good HI titers when they come into lay. As time passes, their titers will decrease considerably, but if VVND threatens, they could be spray-boosted and develop immunity to the point that VVND mortality could be considerably reduced and the flock retained. The previous vaccine experiences could also serve to lessen the reaction and drop in egg production from the spray.

Summary: There are too many variables in flock health status, too great a difference in threat of exposure to VVND, and too much variation in flock isolation and sanitation to allow me or anyone else to present a vaccination program to suit every situation. A program suitable for today may be obsolete by next week because of a nearby outbreak of VVND.

All of us in poultry health should attempt to understand the complexity of the Newcastle vaccination problem and remain flexible, ready to change as the conditions require.

Whether selecting the vaccine strain or the vaccination route, the producer needs to think of purchasing immunity against VVND. Depending on vaccine strain, vaccination route and the level of existing immunity, the price of the purchase in the form of vaccine reaction can be high. Should the threat of VVND become great, the price will be paid.
(By C. W. Beard, D.V.M., PhD, Director, Southeast Poultry Research Laboratory, Agriculture Research Service, U.S. Department of Agriculture, Athens, GA)

ORNITHOSIS HITS TEXAS TURKEYS

After several years of quiescence an outbreak of ornithosis occurred in central Texas turkeys early this spring in a formerly endemic area. Ornithosis, also known as psittacosis or parrot fever, affects humans as well as birds.

In May and June, 1974, a number of poultry processing plant workers in Texas, Missouri, and Nebraska became ill (one death presumably ornithosis). Ornithosis was diagnosed in at least 11 cases and suspected in others. Traceback of the infection in slaughtered poultry led to turkey producing farms in central Texas, which were placed under State quarantine.

APHIS and Texas Animal Health Commission (TAHC) and Texas A&M University (TAMU) officials on July 15, 1974, established an ornithosis project office at College Station to work with producers and processors in combating the disease. Directing the project was Dr. Bill Lowry of the APHIS Veterinary Services area office in Austin; assisted by Dr. W. A. Belcher, TAHC. They had the help of Federal and State veterinarians, epidemiologists and laboratory technicians from Texas and other States.

The objective of the project was to identify flocks with circulating ornithosis antibodies; based on complement fixation test and to initiate antibiotic treatment of the flock to aid in preventing exposure of slaughter plant workers to the infection.

The highest priority was given to the testing of all turkey flocks in the area that were ready for slaughter. During the 3 weeks in the area, the disease fighters tested 152 flocks with 1,124,890 birds. Ten flocks, with a total of 26,500 birds, showed blood titers of circulating antibodies for the ornithosis agent (Chlamydia sp) indicating experience with ornithosis. Quarantine and antibiotic treatment of these flocks was initiated.

Before the testing program started, APHIS and TAHC officials held workshops on the July 13-14, 1974, weekend to brief producers, processors, and officials on the nature of the disease and methods used to control it. Some 75 members and leaders of the Texas turkey industry attended these meetings at Austin and College Station along with representatives of Texas A&M University, Texas Department of Health, and the U S. Department of Health, Education, and Welfare's Center for Disease Control.

Participants at these meetings agreed on a marketing plan that called for inspection and testing of every flock in the area by State or Federal veterinarians within 10 days prior to slaughter. Infected flocks were quarantined and given prescribed antibiotic treatment for 21 days before shipment to slaughter.

Processors agreed not to accept birds for slaughter unless accompanied by an official "market permit" issued by the inspecting USDA or State veterinarian after laboratory tests at Texas A&M confirmed that the birds were negative to the serological test.

After identification of the problem flocks, and initiation of the corrective antibiotic treatment, the program is being continued on a voluntary basis between the Texas turkey industry and local animal disease control officials.

Ornithosis is one of many diseases that can be transmitted between animals and humans, although it is extremely unlikely that it could be transmitted to consumers preparing or eating processed turkey meat. Infection -- caused by the bacteria, Chlamydia psittaci -- is usually carried by aerosol involving feathers, dust or droppings, which explains the high degree of hazard to workers in turkey slaughter plants.

Once diagnosed, ornithosis in birds or humans responds readily to antibiotic treatment. Birds can move safely into food channels following proper treatment to eliminate the organism.

HOG CHOLERA ACTIVITIES

The most recent case of hog cholera diagnosed in the United States occurred in Puerto Rico on May 16, 1974. This disclosure resulted from specimens taken at

the time of depopulation of a herd considered as exposed to the confirmed case in Puerto Rico on May 4, 1974. The last disclosure of infection in the continental United States occurred in Mississippi on February 7, 1974.

All 50 States have qualified in accordance with program standards and have been officially recognized as "Hog Cholera Free." Puerto Rico had also complied with all requirements and was recognized as "Free" in March 1974; however, "Free status" was lost by Puerto Rico following evidence of spread of infection from the case confirmed on May 4, 1974. By program standards, "Free" status may again be reinstated 6 months following the last infection. Puerto Rico will again be recognized as hog cholera "Free" on November 16, 1974, provided no additional hog cholera infection is disclosed.

The goal of hog cholera eradication in the United States seems very close at hand; however, APHIS officials continue to warn the swine industry not to become complacent. The last residuals of infection have been very difficult to diagnose and no satisfactory source of these infections has been established. Evidence indicates that some of the last detected hog cholera virus is of such low virulence that it may tend to immunize and produce no evidence of disease until the right conditions occur. Evidence of this condition has been substantiated by serological findings in known exposed herds. When the right combination of animal passage and stress conditions occur, the infection has demonstrated the capability of again producing disease.

The Advisory Committee on Hog Cholera Eradication has recommended the United States be declared hog cholera "Free" 18 months after the last confirmed case in the United States. They further recommend that an additional 3-year surveillance period be continued after the 18 months to further assure eradication has been achieved. The Advisory Committee on Hog Cholera Eradication has served from the onset of the eradication program. Its members are from various segments of the swine industry representing different regions of the country. The Chairman of the Committee is Dr. F. J. Mulhern, Administrator of APHIS.

UNITED STATES AND PANAMA SIGN FMD AGREEMENT

The United States and Panama have agreed to strengthen a program to help protect the U.S. and Panamanian livestock industries from foot-and-mouth disease (FMD).

Under the agreement, a Panama-U.S. Commission for the Prevention of Foot-and-Mouth Disease will be established to provide additional joint funding and support for Panama's previously existing protection programs. This commission will strengthen the existing program of surveillance and maintenance of two zones. An "inspection" zone, essentially free of livestock, is maintained along the Panama-Colombia border. Next to the inspection zone is a "control" zone in which commercial livestock production is allowed, but only under the strict supervision of animal health authorities.

The agreement is part of an effort by the U.S., Panama and Colombia to prevent FMD from crossing the Darien Gap--a very dense rain forest between Panama, and

Colombia--and thereby protect the livestock industries of Panama, Central and North America. The only unfinished section of the Pan-American highway traverses the Darien Gap. When the highway is completed, it will diminish the natural barrier which the Darien Gap has presented to the spread of FMD from Colombia to the countries to the north.

Panama and OIRSA, an organization of Ministries of Agriculture of Central American countries and Mexico, have been conducting an FMD-prevention program along the Panama-Colombia border since 1966. On the Colombian side, the U.S. and Colombia have implemented an FMD program which appears to be operating successfully.

Recognition of the need to implement added protective measures against the spread of FMD before the Pan-American highway is completed through the Darien Gap led to the agreements with Colombia and Panama to better protect all countries concerned.

USDA's Animal and Plant Health Inspection Service (APHIS) will cooperate with Panama in this agreement.

NEW SYSTEMS ESTABLISHED IN EMERGENCY PROGRAMS INFORMATION CENTER (EPIC)

Automated Information Retrieval System

Among its responsibilities Emergency Programs has a mandate to develop plans of action against exotic animal diseases that pose a potential threat to the livestock and poultry industries of the United States. This responsibility led initially to a review of the diseases existing in the world and devising a method of measuring their importance. As a result of this study, based upon 13 criteria, 41 exotic animal diseases in order of priority were selected for study.

Secondly, a basic Index was compiled containing approximately 3,000 scientific terms arranged in both alphabetical and hierarchical order.

The next procedure was the development of a system for the acquisition of information, its storage, retrieval, and dissemination: A system that would satisfy the requirements for comprehensive coverage, compression of vast amounts of information into limited space, and rapid recall.

In essence, the system includes a search of the world's literature with respect to priority exotic diseases. Relevant articles are photocopied, read, indexed, and coded as to author, title, date, disease, article number and key terms. New terms are assigned code numbers and added to the Index.

Articles and index-code sheets are photographed. Simultaneously, by means of a special keyboard, the code numbers are placed on 16mm microfilm. Each roll of film containing approximately 100 articles is stored by disease in film cassettes. Additional storage, rapid recall and print out is provided by storing bibliographic and code information via a computer terminal to a data bank in New Orleans, LA.

In response to program needs or user request, stored information is rapidly

retrieved photo-optically by means of the coded spots on the film. Documents are disseminated as paper copies or micorfiche. At this time, 487 articles on African swine fever, and 729 articles on Newcastle disease, in the English language, have been photographed and stored. In addition, 100 coded entomological articles of veterinary interest are on microfilm and 400 entomological articles are being prepared for microfilming.

Map Storage and Duplication

An outbreak of an infectious disease must be quickly localized, in order to prevent its spread to the neighboring farms or animal establishments.

The use of maps is an important factor in finding the particular location of an outbreak immediately after suspicion of the infectious disease has been established. These maps will permit both field and headquarter personnel to establish the administrative and natural barriers of an outbreak in order to impose quarantine and other sanitary precautions.

Emergency Programs has at its disposal approximately 3,600 35mm microfilm in aperture cards, depicting in detail all counties of the United States.

In addition, there are approximately 30,000 35mm aperture cards representing geological maps of the U.S. Geological Survey in various scales.

These aperture cards are stored in one location. They are easily accessible and each individual card may be processed quickly in an Itek 2436 Reader-Printer, which produces a 24" by 36" black and white map for immediate use. Maps may be made at the rate of 2 per minute at a cost of approximately 70 cents each.

This map filing system saves space and time and is capable of responding quickly to the needs of headquarters and field personnel. The system has already proven itself in the hog cholera and Newcastle disease emergencies.

WORLD DISEASE REPORTS*

Foot-and-Mouth Disease

Country	Date 1974	New Outbreaks	Country	Date 1974	New Outbreaks
Angola	Jan.-March	1	Malawi	Jan.-Feb.	1
Argentina	March 16-April 30	53	Paraguay	March 1-April 15	22
Austria	March 16-April 15	6		April 20-May 17	7
Belgium	April 16-30	45	Peru	April	3
Brazil	Feb. 23-April 5	622		May 15-31	2
Cameroon	December 1973	3	Rwanda	Oct.-Dec. 1973	2
Colombia	March-April	26**	South Africa	March-April	2
Ecuador	April 16-30	15**	Spain	Feb.-March	114
Egypt	May 1-15	1	Syria	November 1973	3
France	April 16-June 15	9	Tanzania	Oct.-Nov. 1973	5
Ghana	Jan.-Feb.	25			

(cont. on next page)

(FMD cont.)

Greece	Feb.-March	1	Thailand	July-Dec. 1973	63**
Hong Kong	April	4	Turkey	March 16-April 15	24
India	Jan.-Feb.	182	Uganda	Nov.-Dec. 1973	5
Iran	April-May	43		Jan.-Feb.	4
Iraq	April-May	7	Uruguay	May	1
Kenya	Feb.-April	25	U.S.S.R.	March	7
Laos	Feb.-March	3	Venezuela	Feb.-March	5
Lebanon	March-May	28	Viet Nam	March-May	2

Rinderpest

Ghana	Jan.-Feb.	1	Niger	Jan.-Feb.	1
India	Jan.-Feb.	10			

Contagious Bovine Pleuropneumonia

Angola	Feb.-March	6	Ghana	Jan.-Feb.	10

Lumpy Skin Disease

Madagascar	January	5	South		
Rhodesia	March-April	1	Africa	March-April	6
Rwanda	Oct.-Dec. 1973	1			

Sheep Pox

Egypt	April 1-15	2**	Morocco	March-April	40
India	Jan.-Feb.	25	Senegal	Feb.-March	4
Iran	April-May	24	Syria	November 1973	95**
Iraq	April-May	25**	Tunisia	March-May	2
Israel	Jan.-Feb.	1	Turkey	March 16-April 15	97
Lebanon	March-May	14	U.S.S.R.	March	1

Dourine

South Africa reported 2 cases of the disease which occurred March through April.

African Swine Fever

Angola	November 1973-March 1974	1	South Africa	Feb.-April	1
Portugal	April 1-May 15	9	Spain	March 16-May 15	65

(*Adapted from International Office of Epizootics monthly circulars, No.s 329, and 330)
(**Cases)

GPO 880-974